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PATENT APPLICATION

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**IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor(s): Michael Y. YOUNG, et al.

Confirmation No.:

Application No.: 10/807,237

Examiner:

Filing Date: March 24, 2004

Group Art Unit:

Title: SYSTEM AND METHOD FOR A CRADLE-TO-GRAVE SOLUTION FOR INVESTIGATION AND CLEANUP OF HAZARDOUS WASTE IMPACTED PROPERTY AND ENVIRONMENTAL MEDIA

**Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

PETITION TO MAKE APPLICATION SPECIAL UNDER 37 CFR 1.102(XI)

Sir:

This petition is to make the above-identified application "special" on the grounds that the subject matter relates to "counter-terrorism." Accordingly, please examine and advance this application under "special" basis. As support of this petition, please find enclosed a Statement explaining how the invention contributes to countering terrorism.

Please charge the petition fee under 37 CFR 1.17(h) in the amount of **$130.00** to Deposit Account No. 50-2849. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 50-2849 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 50-2849 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

Should the Commissioner require anything further to fulfill this request, he is invited to contact the undersigned directly.

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Respectfully submitted,

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Date: **July 11, 2005**

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Attachment: Statement

WAS:113891.1

STATEMENT

Although future terrorist attacks on our nation may come in a variety of ways, it is almost certain that terrorists will use chemical, biological, radiological, nuclear and/or explosive (CBRNE) agents as their weapons of choice in the next attacks. In order to prevent such an attack from happening and better react to CBRNE emergency, we as a nation, have to rely on

- timely, accurate measurement of CBRNE concentrations at, and in the immediate areas of high value assets
- timely and correct analysis and interpretation of CBRNE intelligence
- speedy knowledge management and data sharing among first line responders and incident managers across different levels of governmental jurisdictions

so that appropriate, sound and effective decisions prior to and during emergency situations can be made to avoid and better react to the next terror attack.

Almost four years after the 9/11 terrorist attacks, the nation has spent billions of dollars in organizing the response parties, identifying priority of competition tasks, and purchasing hardware and tools to better prepare the nation for the next terror attack. Unfortunately much of homeland protection related data collection and interpretation task are being provided by highly specialized and distinct professions acting as separate vertical silos that unintentionally results in data islands with little or limited communications between them. Much of hard-earned CBRNE information and intelligence is therefore unavailable to the first line responders and incident mangers at the time of emergency simply because such data is stored in various data islands that are not compatible and interchangeable. Sharing hard-earned data and promoting collaboration among participants remain the top major obstacle and the most elusive, challenging piece of the puzzle for the nation to overcome.

The lack of real-time accurate CBRNE data from the field, inaccurate or incomplete intelligence, misinterpretation of site situation and/or belated information always lead to misguided approaches and wrong decisions which in turn exacerbate the situation and result in greater loss of live and property damage to the society. The success of homeland protection is therefore totally hinged upon timely and accurate CBRNE data collection, analysis, interpretation and sharing to empower incident managers and first line responders alike to perform their jobs better and efficiently respond to emergencies.

Recognizing these deficiencies, the Department of Homeland Security issued seven Interim National Preparedness Goals on April 1, 2005 which include:

- Strengthening information sharing and collaboration capabilities
- Strengthening interoperable communications capabilities
- Strengthening CBRNE detection, response and decontamination capabilities
- Expanding regional collaboration

In order to accomplish the above goals, a system that can automatically and remotely acquire field CBRNE data and allow users to perform cradle-to-grave functions needed for CRBNE emergency is required. The CBRNE data collected from the above cited data islands is first imported and stored in a centralized standardized database structure. The data can be instantly analyzed spatially and temporarily to discern trends, transformed to 3 dimensional graphics for visualization to understand complex site conditions and facilitate decision makings. Most importantly, the CBRNE data and results of its analyses can be shared with various agencies at different levels across different jurisdictions. Accessing information from a universally accessible centralized database that links information from data islands is the key to establish a system to promote data sharing, communication and collaboration among parties. By utilizing the same information, this system will allow for an incident management control that is unified, accurate and efficient.

The present application describes embodiments of a system that meet the above-described needs of homeland security and the nation's counter terrorism efforts. The functions and applications described in the present application can be immediately applied to a homeland security embodiment. The homeland security embodiment utilizes real-time, online and web-based aspects described in the present application. Embodiments described in the present application can be used to real-time and instantly

- acquire sensor readings of chemical, biological, radiological, nuclear and explosive agents at and in the immediate areas of a target high value asset;
- integrate highly subject-specific data into a common platform and enable users to access information in each data island seamlessly
- perform trend analysis to discern threats at the site;
- warn incident managers and first line responders of unusual CBRNE readings in the field

- visualize and understand complicated CBRNE conditions at the site by reviewing 3-D graphics;
- report detected weapons of mass destruction (WMD) threats
- perform health risk assessment to quantify the nature and magnitude of CBRNE release and;
- facilitate emergency responses and decision makings thereto.

For example, instead of a hazardous waste site, the homeland security site monitored by embodiments described in the present application may be a subway, a refinery, a nuclear power plant, a chemical manufacturing plant or a storage facility, a government building, a sporting arena, an intersection, a city block, etc. Instead of monitoring wells, the homeland security site may have sensors detecting airborne chemical, biological, radiological, nuclear or explosive agents.

A central database described in the present application may include baseline environmental data (*e.g.*, toxicity of an agent, safe explosive levels, alarm trigger concentrations limit, etc) for the homeland security site. The sensors provide live updates measurement readings to the system that are processed by embodiments of the application described in the present application and stored in the central database. Storing the live updates in the central database enables real time displays of measured concentrations across a large area or user-defined region of interest (ROI) in GIS maps as well as having the ability to perform spatial and temporal trend analysis and pattern studies. Embodiments described in the present application may include regulatory standards for safe levels of possible chemical, biological, radiological, nuclear or explosive agents of concern (AOCs). Embodiments described in the present application monitor the live updates from the sensors (*e.g.*, using a continuous monitoring system) and continuously compares the live updates to the regulatory standards. If the live updates exceed or get within a certain percentage of the regulatory standard, embodiments described in the present application determine the location of the associated sensor(s), generates a warning (*e.g.*, email, text messages via cell phones, etc) and sends it to the responsible party, and displays the sensor(s) location on the GIS map. A user may also access a three dimensional display of the AOC contamination, conduct a risk assessment and run response and remediation scenarios to determine emergency response and cleanup possibilities, respectively. The same embodiment may also be used to study what-if scenarios and conduct strategic planning by loading in user-selected hypothetical data and sensor readings.